INFORMATION SYSTEMS PLANNING REPORT
EDUCATION SECTOR

NOVEMBER 1986

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EXHIBITS

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I MAJOR ISSUES

A. DRIVING FORCES

- Administrative applications are being used to increase the efficiency of the business and administrative functions in the education sector. Micro-computers are being used as an addition or supplement to larger computer systems. New administrative applications should integrate with the basic administrative systems (e.g., budgeting, general ledger, payroll, etc.).

- Wide area networks will be developed extensively to link universities intern-ally and with other institutions around the country. These networks will permit universities to gain access to other schools' resources (e.g., library catalogs). This will require large telecommunications and data administration efforts for network participants.

- Primary and secondary schools as well as post-secondary institutions are using micros as tools in the educational process. Originally, micros were used to teach computer literacy concepts, an approach which did not work due mainly to a lack of trained teachers.

- The education sector is always under severe political pressure to cut costs. IS can provide a means to improve productivity in administrative departments, but it, too, is under severe cost constraints. IS' challenge is to produce beneficial systems while operating under tight budgetary controls.

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- Declining birth rates in the 1960s have resulted in a smaller pool of applicants for post-secondary institutions. Colleges, universities, and technical and vocational schools must offer more services to students and learn consumer marketing techniques.

- Exhibit I-1 lists the driving forces affecting the education sector's IS departments.

B.   ISSUES AND OBJECTIVES

- The major issues and objectives being addressed by this sector can be categorized as follows:

    - Reduce costs. IS must produce cost savings systems and yet keep its budget growth to a minimum.

    - Improve and expand data communications. Communication within and outside an institution is required for document interchange and to link academic systems. Incompatibility between computers and among networks is a major impediment to achieving this goal.

    - Improve staff productivity, especially in student services applications.

    - Establish centralized, integrated student information systems as the key means of providing better services to students.

- Exhibits I-2 and I-3 summarize the issues and objectives identified by the respondents in this sector.

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EXHIBIT I-1

EDUCATION
DRIVING FORCES

- **Demand to Integrate Administrative Systems**

- **Inter-University Networks**

- **Changing Use of Micros in Education**

- **Politics of Government and School Boards**

- **Cost Containment**

- **Decreasing Supply of Students for Post-Secondary Institutions**

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EXHIBIT I-2

EDUCATION
ISSUES

- Document Exchange among Various Computers

- Demand for Enhanced Telecommunication Networks

- Integrated Student Information System

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EXHIBIT I-3

EDUCATION
OBJECTIVES

- IS Survival with Decreasing Budgets

- Resolve Incompatibility among Computers and Networks

- Upgrade Hardware and Software

- Improve Productivity

- Establish a Central, Integrated Administration System

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C.   MANAGEMENT PERCEPTION AND ORGANIZATIONAL ISSUES

- Management views IS as an important resource, but its main emphasis is on IS as a cost controlling source. This sector's respondents generally do not believe that IS will be used for strategic purposes as long as management must comply with severe budgetary pressures.

- In the past two years, the respondents have seen their management visibility improve and their user base expand. In the next two years the respondents see their role becoming more consultative, especially with the growing use of micros in administration and academic applications.

- IS plays a significant role in the planning process. One respondent stated that "IS controls the planning process." The need for systems puts IS into a major planning role in larger educational institutions.

D.   IMPACT OF TECHNOLOGY

- End-user computing primarily centers on micro support and micro-to-mainframe applications. End-user computing accounts for about 40% of the expenditures in respondent institutions.

- Departmental processing is being actively studied by respondents, but most believe that micro-to-mainframe applications will be used instead of departmental processing.

- Distributed systems development (DSD) is not being used by respondents. Some are planning to use DSD for office systems development, but not in the next two years.

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- There is little activity in the use of relational data bases other than using relational-like data bases with fourth generation languages.

- The respondents thought it was technologically premature to consider merging voice and data communications. It is currently too expensive to even consider experimentally. In 1986, larger universities have begun studies for implementation in the two- to five-year timeframe.

- There is some localized use of LANs on campuses, but the lack of standards has inhibited their widespread use.

- Exhibit I-4 summarizes the impact of the above technological issues in IS for the education sector.

- The respondents have allocated a substantial portion of their IS resources to end-user computing. This has spurred growth in IS and shifted resourced from data processing operations to end-user support.

- In most cases, IS has established a formal training group to support end users. It conducts classes, controls purchases of microcomputers, publishes newsletters, and establishes workshops. IS does most of the end-user training in these respondents' institutions.

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EXHIBIT I-4

EDUCATION
IMPACT OF TECHNOLOGY

	IMPACT	COMMENTS
End-User Computing	High	Requires increased IS support staff. Many micro-to-mainframe concerns.
Departmental Processing	Low/ Medium	Primarily micro-to-mainframe storage requirements are too great for minis, although some application may exist.
Distributed Systems Development	Low	Primarily at OA level.
Relational Data Bases	Medium	Users are slowly implementing IBM IDBS/R, although data bases are seen as important.
Voice/Data Integration	Low	Activity limited to studies for 2-5 year implementation.
LANs	Low	Lack of standards inhibiting growth. Some minor activity.

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II NEW APPLICATIONS

- As the basis for offering student services in a competitive educational environment, integrated student information systems is the dominant new application. Converting data base information to relational data bases is now a reality. Asset management (human, facilities, and vehicles) represents an area with good payback from computerization.

- Exhibit II-1 shows the major new applications identified by respondent institutions in this sector.

- The education sector tends to keep software development in-house, as evidenced by the overwhelming proportion of in-house development for new applications (see Exhibit II-2).

- Student information systems and student records were the most expensive new education applications; the cost of each exceeds $1 million and will be implemented over two to three years.
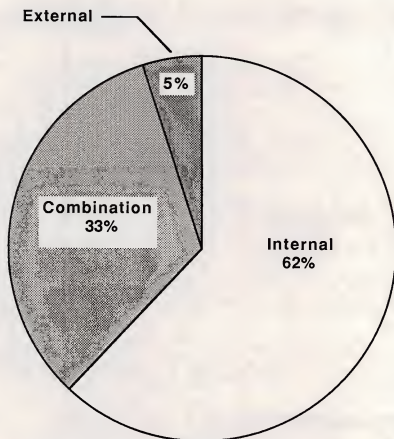
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EXHIBIT II-1

EDUCATION
NEW APPLICATIONS IN 1986

- **Integrated Student Information System**

- **Human Resource Management**

- **Extending Data Base Management Software**

- **Student Records System**

- **Property Control System**

- **Library Catalogue System**

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EXHIBIT II-2

EDUCATION
SOURCE OF APPLICATION DEVELOPMENT
(All Major New Applications)

Cost Range of New Applications Software: $8,000 - $3,000,000

Average Cost of New Application Software: $400,000

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III   BUDGET ANALYSIS

- In 1986, the respondents experienced limited growth in their IS budgets. This was primarily due to increases in salaries and fringe benefits in some schools balanced by mandatory cost reductions in other schools. 1987 is projected to have a significantly slower growth as new applications started this year are implemented and end-user support groups maintain current staff levels.

    - Exhibit III-1 shows the 1986 budget distribution and projects the growth of budget categories in 1987.

- Three-fourths of the respondents project that their IS budgets will increase or remain the same in 1987, but one-fourth believe the growth rates will be lower than 1986 (see Exhibit III-2).

    - Factors contributing to increases in the IS budget include (in order of most frequently mentioned factors):

        . Personnel.

        . Hardware.

        . Supplies and outside services.

    - Factors contributing to decreases in the IS budget include:

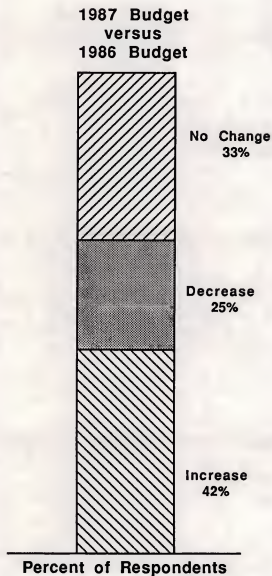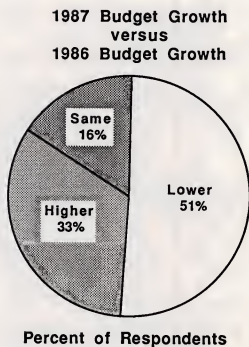   . Government funding.

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EXHIBIT III-1

1986 BUDGET DISTRIBUTION AND
1986/1987 CHANGES IN THE EDUCATION SECTOR

BUDGET CATEGORY	1986 PERCENT OF I.S. BUDGET	1986-1987 EXPECTED BUDGET GROWTH
Personnel Salaries and Fringes	47.2%	3.8%
Mainframe Processors	10.6%	(4.8%)
Minicomputers	6.2%	(2.8%)
Microcomputers	5.8%	3.2%
Mass Storage Devices	4.9%	2.1%
Other Hardware	3.0%	(15.3%)
Total Hardware	30.5%	(0.9%)
Data Communications	5.2%	5.8%
External Software	5.7%	11.2%
Professional Services	1.2%	(0.9%)
Turnkey Systems	0.1%	2.3%
Software Maintenance	4.6%	6.2%
Hardware Maintenance	5.3%	8.4%
Outside Processing Services	0.1%	(2.3%)
Other	0.1%	3.5%
Total	100.0%	2.5%

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EXHIBIT III-2

EDUCATION
MOST BUDGETS ARE INCREASING AT A LOWER RATE

1987 Budget Growth
versus
1986 Budget Growth

Same
16%

Higher
33%

Lower
51%

Percent of Respondents

1987 Budget
versus
1986 Budget

No Change
33%

Decrease
25%

Increase
42%

Percent of Respondents

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- Sixty-four percent of respondents indicated that MIS department headcount increased in 1986 from 1985. The remaining 36% of respondents indicated 1986 headcount remained the same.

- The IS budget in the education sector is dependent on government appropriations. Since most of this sector is controlled by public agencies, IS management must spend a considerable portion of their time "lobbying" for funding. Thus, this sector's IS organizations usually lag in the use of new technology and systems.

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